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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,008	02/18/2004	Katsunobu Sumimura	KGMEP016	5426

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EXAMINER	
LEFF, STEVEN N	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/782,008	SUMIMURA ET AL.	
	Examiner	Art Unit	
	STEVEN LEFF	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1 and 3* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

- Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bengtsson et al. (3734751) in view of Hekai (4857343).

  Bengtsson et al teach the preparation of "leaf vegetables such as spinach" (abstract). Bengtsson et al specifically teach the method of first "increasing the dry matter content of the comminuted vegetables by partial dewatering, for example by pressing or centrifugation, to a dry matter content of about 9-15% by weight." (pg. 1 col. 1 lines 62+) "Centrifugation, using a desludging centrifuge, is preferred, and this operation yields two streams." (pg. 1 col. 1 line 64+) "The first is the product, containing 9-15% by weight of dry matter, and a clear effluent containing less than about 3% solids." (pg. 1 col. 1 lines 66+) Bengtsson et al further teach that the effluent "may be purified, for example by treatment with… electrodialysis." (pg. 1 col. 2 line 2+) "The purification step removes from the effluent certain undesirable anions, such as nitrite…" (pg. 1 col. 2 line 5+). More specifically it is noted that Bengtsson et al. teach, with respect to example 1, an effluent stream concentrated to 40% solids which is combined 50/50 with the product stream at 11.5% solids to yield a total solids content of about 26%.

Bengtsson et al. teaches using a desludging centrifuge in order to obtain a dry matter content of less than 3%. Although Bengtsson et al does not refer to the dry matter content as "sludge volume" Bengtsson et al. does teach the use of centrifugation for its art recognized and applicants intended purpose of reducing the dry matter content. Sludge volume is defined as the amount of dry matter in a given amount of fluid. Therefore Bengtsson et al. teaches the limitation according to claim 1.

However Bengtsson et al. is silent with respect to a specific Brix value for the concentrated juice and the removal of specifically nitrate. Bengtsson et al. is further silent with respect to the specific speed with which the juice flows over the membrane surface during electrodialysis and a temperature of 10C or lower.

With respect to Bengtsson et al. being silent with respect to specifically the removal of nitrate, Bengtsson et al. does teach the removal from the effluent certain undesirable anions, such as nitrite…" (pg. 1 col. 2 line 5+) and thus removing nitrates flows logically since nitrates and nitrites are both present in kelp, and spinach. Therefore it would have been obvious to remove nitrate since Bengtsson et al. teach the removal of undesirable anions, including nitrite by electrodialysis from specifically spinach and kelp juice, thereby optimizing the treating method and providing a purified juice as is desired by Bengtsson et al. since all "undesirable anions" have been removed.

Brix is a measurement that is dependant upon the amount of solids in a given weight of plant juice. Expressed another way Brix is a summation of pounds of sucrose, fructose, vitamins and other solids in one hundred pounds of any particular plant juice. The amount of water that is present as well as the amount of solids that are present is dependant upon the type of plant. Further the Brix value can be altered to any degree by the addition or subtraction of water. Therefore with regard to Bengtsson et al., although Bengtsson et al. does not specifically recite a specific Brix value for the concentrated juice, Bengtsson et al. does teach "partially dewatering", and further teaches a dry matter content of 9-15% resulting in an effluent (vegetable juice) with a dry matter content of less than 3%.

Thus it would have been obvious to one of ordinary skill in the art to adjust the Brix value by adjusting the amount of water with respect to the solid (sugar) content. This value would further be dependent upon the type of vegetable being used due to the

differences in sugar content between different vegetables. Consequently, one of ordinary skill in the art would have been motivated to adjust the Brix value in order to obtain an end product that is desirable in taste, color, etc. or for optimal removal from the effluent certain undesirable anions, such as nitrite…" (pg. 1 col. 2 line 5+), where removing nitrates flows logically since nitrates and nitrites are both present in kelp, and spinach. Therefore it would have been obvious to remove nitrate since Bengtsson et al. teach the removal of undesirable anions, including nitrite by electrodialysis from specifically spinach and kelp juice, thereby optimizing the treating method and providing a purified juice as is desired by Bengtsson et al. since all "undesirable anions" have been removed with respect to the specific vegetable being used.

In addition, the length of time which centrifugation takes place during "dewatering" would proportionally affect the Brix value due to the amount of water that would be present in the effluent (vegetable juice). The Brix value, with respect to Bengtsson et al. would be dependant upon the extent of which "dewatering" is to take place. The effluent (vegetable juice) could have a range of possible Brix values that could be controlled by the amount of "dewatering".

With respect to the specific speed with which the juice flows over the membrane surface during electrodialysis of .5-10 cm/sec and a temperature of 10C or lower.

Hekai teaches the "treatment of liquid comestibles such as fruit and vegetable juices." (col. 1 line 6+) The "liquid comestibles are electrolytically treated… at temperatures lower than those normally used…" (abstract) The particular temperature range that Hekai teaches is 160 degrees Fahrenheit or less (col.3 line 36+). Hekai further teaches, "in the line to the inlet there normally is a proportioning means such as a valve or pump, not shown, for controlling the flow rate of the fruit juice. (col. 4 line 57+)

Therefore, one of ordinary skill in the art would have been motivated to combine the teachings of Bengtsson et al and Hekai to produce a vegetable juice with a flowing speed of .5-10cm/sec at a temperature of 10C or lower, since although Bengtsson et al does not teach a specific speed with which the juice flows over the membrane surface during electrodialysis, Bengtsson et al does teach the use of vegetable juice, specifically spinach juice, and the method of removing nitrites and other undesirable anion (col. 2 lines 5-6) from concentrated juice through the use of electrodialysis. Hekai teaches the idea of controlling the flow rate of the juice during electrodialysis. The flow rate with

which the vegetable juice passes over the membranes during electrodialysis can be, and is needed to be, directly controlled in order to attain the desired vegetable juice. For instance, different factors such as, vegetable juice with different Brix values, and the temperature of the juice would affect the viscosity as well as the specific type of vegetable juice being used. All of these factors must be taken into account when adjusting the flow rate of the juice with respect to the membrane, thus necessitating a valve for controlling the flow rate. Therefore it would have been obvious to combine a range of Brix values, and/or a list of vegetables with a range of operating speeds for the vegetable juice in order to optimize the treatment conditions with respect to a specific material to be treated.

With respect to the specific temperature of 10C or lower, Hekai teaches in example 1 the use of a "chilled (42 F) single strength orange juice". Although example 1 specifically recites the use of orange juice, Hekai teaches the overall method with respect to "fruit and vegetable juices" (col. 1 line 6+). Consequently, it would have been obvious to one of ordinary skill in the art to substitute a vegetable juice such as spinach, celery or kale juice, as taught by Bengtsson et al., for the orange juice as is stated by Hekai in example one. Hekai therefore teaches the method of producing a vegetable juice using electrodialysis, where the juice is chilled to a temperature of less than 10C and the juice flows into the chamber at a flow rate of .5-10cm/sec. The only difference between the prior art of Bengtsson et al and that of the claimed method was a recitation of temperature and speed of the juice flowing over the membrane; however Hekai positively teaches these specifics with regards to producing vegetable juice. The method of producing a vegetable juice, of the instant claims, would not be expected to perform differently than the prior art method; therefore the claimed method is not patentably distinct from the prior art method.

Response to Arguments

It is initially noted with respect to applicant's assertion that it would take an unreasonably demanding effort to discover such narrowly defined conditions, that the method is with respect broadly to "leaf vegetables" in general, and thus since the only difference between the prior art and the claims was a recitation of specific treating parameters with respect to specific treating material, one of ordinary skill in

the art would not expect the method of the instant claims to perform differently than the prior art method, thus the claimed method is not patentably distinct from the prior art method (See MPEP 2144.04 IV A). "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation," (see MPEP 2144.05 IIA), as the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages" (see MPEP 2144.05 IIA) to achieve the desired amount of nitrate nitrogen removal with regard to a specific product under specific conditions.

With respect to applicant's argument that Bengtsson does NOT describe or hint at the steps of concentrating a vegetable juice and carrying out electrodialysis on the concentration, concentrating a vegetable juice to Brix 20-40% and subjecting the concentrated vegetable juice to electrodialysis or teach that nitrate nitrogen can be efficiently removed from a vegetable juice with a high workability if it is firstly concentrated to Brix 20-40% and then the concentrated vegetable juice is subjected to electrodialysis under specified conditions, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The claims do not involve an inventive step, and does not provide a patentable distinction to the claims since reciting a specific Brix value with respect to the concentration of juice, as is taught by Bengtsson et al., or with respect to when the juice is treated would be a matter of judicious selection of specific parameters with respect to the overall desired outcome of the product which is treated, as is already taught by Bengtsson et al. and since MPEP 2144.07 states that the selection of a known process based on its suitability for its intended use supports a prima facie obviousness determination where treating the juice with electro dialysis can only occur either prior to or after concentration.

Further, in the instant where a specific vegetable, and subsequently a specific vegetable juice is produced and treated, one of ordinary skill would have been motivated to produce a specific Brix concentration thus identifying the optimal Brix concentration with respect to a specific vegetable at a number of different result effective variables thus more precisely affecting the taste of the juice since it is more concentrated and/or for removing specific anions such as nitrate nitrogen as is taught by Bengtsson et al. since Bengtsson et al. does teach the removal from the effluent certain undesirable anions, such as nitrite…" (pg. 1 col. 2 line 5+) and thus removing nitrates flows logically since nitrates and nitrites are both present in kelp, and spinach. Therefore it would have been obvious to remove

nitrate since Bengtsson et al. teach the removal of undesirable anions, including nitrite by electrodialysis from specifically spinach and kelp juice, thereby optimizing the treating method and providing a purified juice as is desired by Bengtsson et al. since all "undesirable anions" have been removed.

Therefore "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation," (see MPEP 2144.04 IlA) and further "the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages" (see MPEP 2144.04 lIA) to achieve the desired amount of nitrate nitrogen removal with regard to a specific product under specific conditions.

Therefore since Brix is a measurement that is dependant upon the amount of solids in a given weight of plant juice. Expressed another way Brix is a summation of pounds of sucrose, fructose, vitamins and other solids in one hundred pounds of any particular plant juice. The amount of water that is present as well as the amount of solids that are present is dependant upon the type of plant. Further the Brix value can be altered to any degree by the addition or subtraction of water. Therefore with regard to Bengtsson et al., although Bengtsson et al. does not specifically recite a specific Brix value for the concentrated juice, Bengtsson et al. does teach "partially dewatering", and further teaches a dry matter content of 9-15% resulting in an effluent (vegetable juice) with a dry matter content of less than 3%.

Thus it would have been obvious to one of ordinary skill in the art to adjust the Brix value by adjusting the amount of water with respect to the solid (sugar) content. This value would further be dependent upon the type of vegetable being used due to the differences in sugar content between different vegetables. Consequently, one of ordinary skill in the art would have been motivated to adjust the Brix value in order to obtain an end product that is desirable in taste, color, or for optimal removal from the effluent certain undesirable anions, such as nitrite…" (pg. 1 col. 2 line 5+), where removing nitrates flows logically since nitrates and nitrites are both present in kelp, and spinach. Therefore it would have been obvious to remove nitrate since Bengtsson et al. teach the removal of undesirable anions, including nitrite by electrodialysis from specifically spinach and kelp juice, thereby optimizing the treating method and providing a purified juice as is desired by Bengtsson et al. since all "undesirable anions" have been removed.

With respect to applicant's assertion that the final solid component is 13.2% it is noted that 50 *11.5%= 50*.115= 5.75, where 50*40%=50*.4=20 and thus 20+5.75=25.75 or about 26% where one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Leff whose telephone number is (571) 272-6527. The examiner can normally be reached on Mon-Fri 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Drew E Becker/
Primary Examiner, Art Unit 1794

/Steven Leff/
Examiner, Art Unit 1794